

## Shenzhen Toby Technology Co., Ltd.



Report No.: TBR-C-202308-0074-33

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## **RF Test Report**

FCC ID: 2BCKS-PR02

**Report No.** : TBR-C-202308-0074-33

**Applicant**: Shenzhen iPeace Entity Co. Ltd

**Equipment Under Test (EUT)** 

**EUT Name** : UHF RFID READER WRITER

Model No. : PR02

Serial Model No. : PR01, PR03, PR04

Brand Name : KUMEAI

Sample ID : HC-C-202308-0074-01-01-1#& HC-C-202308-0074-01-01-2#

**Receipt Date** : 2023-08-22

**Test Date** : 2023-08-22 to 2023-09-25

**Issue Date** : 2023-09-25

Standards : FCC Part 15, Subpart C 15.249

**Test Method** : ANSI C63.10:2013

Conclusions : PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

**Test/Witness Engineer**:

With

Engineer Supervisor : WW SV



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



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## **Revision History**

Report No.	Version	Description	Issued Date
TBR-C-202308-0074-33	Rev.01	Initial issue of report	2023-09-25
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## 1. General Information about EUT

## 1.1 Client Information

Applicant : Shenzhen iPeace Entity Co. Ltd		
Address : 702, Tower 3, Laizuoshan, BuJi, Longgang District, Shenzhen, China		702, Tower 3, Laizuoshan, BuJi, Longgang District, Shenzhen, China.
Manufacturer : Shenzhen iPeace Entity Co. Ltd		Shenzhen iPeace Entity Co. Ltd
Address :		702, Tower 3, Laizuoshan, BuJi, Longgang District, Shenzhen, China.

## 1.2 General Description of EUT (Equipment Under Test)

EUT Name		UHF RFID READER W	UHF RFID READER WRITER			
Model(s)		PR02, PR01, PR03, PR04				
Model Difference		All these models are identical in the same PCB, layout and electrical circuit, the only difference is Appearance and Model name.				
		Operation Frequency:	902.25MHz~909.25MHz			
1000	77	Number of Channel:	8 Channel			
Product	:	Out Power:	74.65dBuV/m@3m Peak			
Description		Antenna Gain:	3.5dBi Ceramic Antenna			
		Modulation Type:	FSK			
Power Rating		Input: DC 5V DC 3.7V/3.8V by 10000mAh Rechargeable Li-ion battery				
Software Version		: V1.0				
Hardware Version						
Connecting I/O		Please refer to the Use	er's Manual			
Port(S)						

#### Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

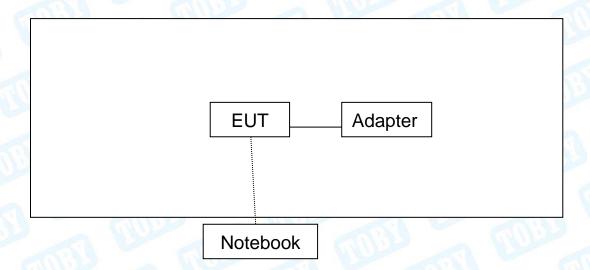
### (2) Channel List:

Channel	Frequency (MHz)
01	902.25
02	903.25
03	904.25
04	905.25
05	906.25
06	907.25
07	908.25
08	909.25





## 1.3 Block Diagram Showing the Configuration of System Tested



## 1.4 Description of Support Units

The second secon							
Equipment Information							
Name Model FCC ID/SDOC Manufacturer Used "							
		10377	(1)777				
Cable Information							
Number Shielded Type Ferrite Core Length Note							
	(UP) (II)						





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### 1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

Fo	or Conducted Test(AC POWER)				
Final Test Mode Description  Mode 1 TX Mode					
Final Test Mode	Final Test Mode Description				
Mode 2 TX Mode					
Mode 3 TX FSK Mode (Channel 01/04/08)					

#### Note:

For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

- (1) According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels.
- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a Mobile unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.







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## 1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF mode.

Test Software Version	RFID_Reader_Csharp			
Frequency	902.25MHz	905.25MHz	909.25MHz	
FSK	4.8	4.8	4.8	

## 1.7 Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U <sub>Lab</sub> )
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
4000	150kHz to 30MHz	±3.42 dB
Dedicted Emission	Level Accuracy:	. 4 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	.4.40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Dadiated Emission	Level Accuracy:	.4.20 dD
Radiated Emission	Above 1000MHz	±4.20 dB





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### 1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

#### **CNAS (L5813)**

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

#### A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

### IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



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## 2. Test Summary

FCC Part 15 Subpart C(15.249)							
Standard Section							
FCC	Test Item	Test Sample(s)	Judgment	Remarl			
15.203	Antenna Requirement	HC-C-202308-0074-01-01-2#	PASS	N/A			
15.205	Restricted Bands	HC-C-202308-0074-01-01-1#	PASS	N/A			
15.207	AC Power Conducted Emission	HC-C-202308-0074-01-01-1#	PASS	N/A			
15.249 &15.209	Radiated Spurious Emission	HC-C-202308-0074-01-01-2#	PASS	N/A			
15.215(C)	20dB Bandwidth	HC-C-202308-0074-01-01-2#	PASS	N/A			

## 3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	EZ-EMC	EZ	FA-03A2RE
RF Conducted Measurement	MTS-8310	MWRFtest	V2.0.0.0
RF Test System	JS1120-3	Tonscend	V3.2.22





## 4. Test Equipment

<b>Conducted Emiss</b>	sion Test				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jun. 20, 2023	Jun. 19, 2024
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jun. 20, 2023	Jun. 19, 2024
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jun. 20, 2023	Jun. 19, 2024
LISN	Rohde & Schwarz	ENV216	101131	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	NTFM 8131	8131-193	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	CAT3 8158	cat3 5158-0094	Jun. 20, 2023	Jun. 19, 2024
ISN	SCHWARZBECK	NTFM5158	NTFM5158 0145	Jun. 06, 2023	Jun. 05, 2024
ISN	SCHWARZBECK	CAT 8158	cat5 8158-179	Jun. 20, 2023	Jun. 19, 2024
Radiation Emission	on Test (B Site)				
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100060	Aug. 30, 2023	Aug. 29, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 20, 2023	Jun. 19, 2024
EMI Test Receiver	Rohde & Schwarz	ESU-8	100472/008	Feb. 23, 2023	Feb.22, 2024
Bilog Antenna	SCHWARZBECK	VULB 9168	1225	Dec. 05, 2021	Dec. 04, 2023
Horn Antenna	SCHWARZBECK	BBHA 9120 D	2463	Feb. 26, 2022	Feb.25, 2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Jun. 26, 2022	Jun.25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 26, 2022	Jun.25, 2024
HF Amplifier	Tonscend	TAP9E6343	AP21C806117	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP051845	AP21C806141	Aug. 30, 2023	Aug. 29, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
Highpass Filter	CD	HPM-6.4/18G		N/A	N/A
Highpass Filter	CD	HPM-2.8/18G	(110)	N/A	N/A
Highpass Filter	XINBO	XBLBQ-HTA67(8-25G)	22052702-1	N/A	N/A
Antenna Conduct	ed Emission				·
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jun. 20, 2023	Jun. 19, 2024
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 20, 2023	Jun. 19, 2024
MXA Signal Analyzer	KEYSIGHT	N9020B	MY60110172	Aug. 30, 2023	Aug. 29, 2024
MXA Signal Analyzer	Agilent	N9020A	MY47380425	Aug. 30, 2023	Aug. 29, 2024





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			B 1 14 1 B		
Vector Signal Generator	Agilent	N5182A	MY50141294	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	Agilent	N5181A	MY48180463	Aug. 30, 2023	Aug. 29, 2024
Vector Signal Generator	KEYSIGHT	N5182B	MY59101429	Aug. 30, 2023	Aug. 29, 2024
Analog Signal Generator	KEYSIGHT	N5173B	MY61252685	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO26	Aug. 30, 2023	Aug. 29, 2024
RF Power Sensor	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO29	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO31	Aug. 30, 2023	Aug. 29, 2024
	DARE!! Instruments	RadiPowerRPR3006W	17I00015SNO33	Aug. 30, 2023	Aug. 29, 2024
RF Control Unit	Tonsced	JS0806-1	21C8060380	N/A	N/A
RF Control Unit	Tonsced	JS0806-2	21F8060439	Aug. 30, 2023	Aug. 29, 2024
Power Control Box	Tonsced	JS0806-4ADC	21C8060387	N/A	N/A
Wideband Radio Comunication Tester	Rohde & Schwarz	CMW500	144382	Aug. 30, 2023	Aug. 29, 2024
Universal Radio Communication Tester	Rohde&Schwarz	CMW500	168796	Feb. 23, 2023	Feb.22, 2024
Temperature and Humidity Chamber	ZhengHang	ZH-QTH-1500	ZH2107264	Jun. 20, 2023	Jun. 19, 2024





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## 5. Conducted Emission Test

#### 4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

#### 4.1.2 Test Limit

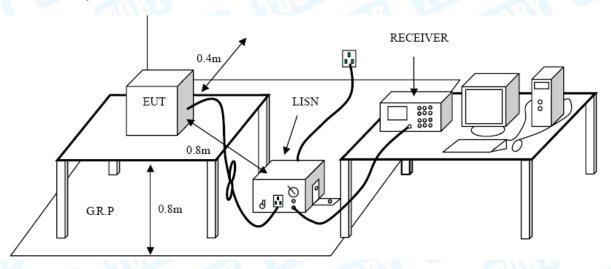
#### **Conducted Emission Test Limit**

	Maximum RF Line Voltage (dBμV)				
Frequency	Quasi-peak Level	Average Level			
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

#### Notes:

- (1) \*Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 4.2 Test Setup



#### 4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back





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and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN is at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

#### 4.4 EUT Operating Mode

Please refer to the description of test mode.

#### 4.5 Test Data

Please refer to the Attachment A.







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## 6. Radiated Emission Test

## 5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.209

5.1.2 Test Limit

#### Radiated Emission Limit (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

### Radiated Emission Limit (Above 1000MHz)

Frequency	Distance Meters	s (at 3m)
(MHz)	Peak	Average
Above 1000	74	54

#### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(Uv/m)

### Limits of radiated emission measurement (15.249)

FCC Part 15 (15.249), Subpart C					
Limit Frequency Range (MHz)					
Field strength of fundamental	000,000				
50000 μV/m (94 dBμV/m) @ 3 m	902~928				
Field strength of fundamental	Polow 002 and Above 029				
500 μV/m (54 dBμV/m) @ 3 m	Below 902 and Above 928				



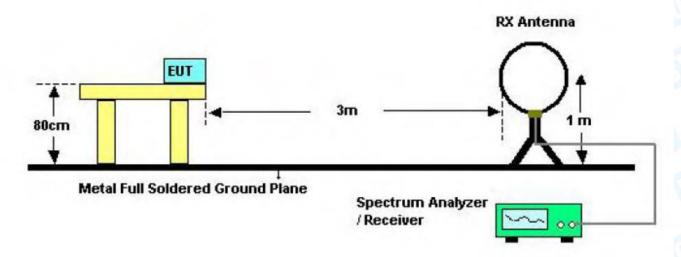


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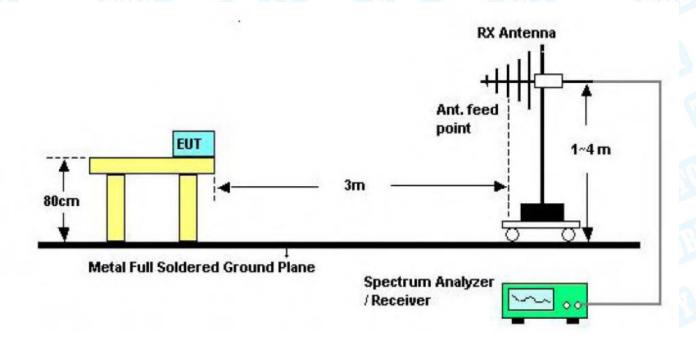
# Restricted bands requirement for equipment operating in 902MHz to 928 MHz (15.249)

Restricted Frequency Band (MHz)	(dBuV/m)(at 3 M)		
902~928	Attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in 15.209, whichever is the lesser attenuation		

## 5.2 Test Setup



Below 30MHz Test Setup



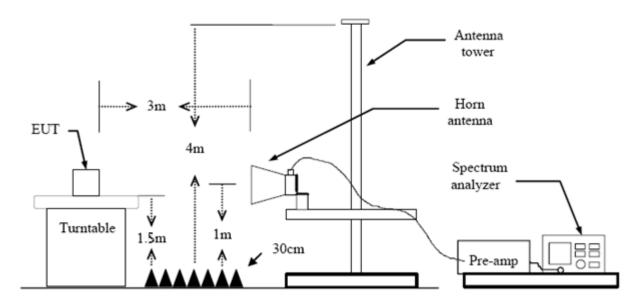






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#### Bellow 1000MHz Test Setup



Above 1GHz Test Setup

#### 5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency Below 1GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.





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(8) For the actual test configuration, please see the test setup photo.

## 5.4 EUT Operating Condition

The EUT was set to Continual Transmitting in maximum power, and new batteries are used during testing.

### 5.5 Test Data

Please refer to the Attachment B.

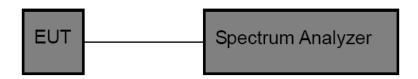




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## 7. Bandwidth Test

### 6.1 Test Setup



#### 6.2 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Bandwidth: RBW=100 kHz, VBW=300kHz.

(3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.

### 6.3 EUT Operating Condition

The EUT was set to continuously transmitting for the Bandwidth Test.

#### 6.4 Test Data

Please refer to the Attachment C.





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## 8. Antenna Requirement

## 7.1 Standard Requirement

7.1.1 Standard FCC Part 15.203

#### 7.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### 7.2 Antenna Connected Construction

The gains of the antenna used for transmitting is 3.5dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

#### 7.3 Result

The EUT antenna is Ceramic Antenna. It complies with the standard requirement.

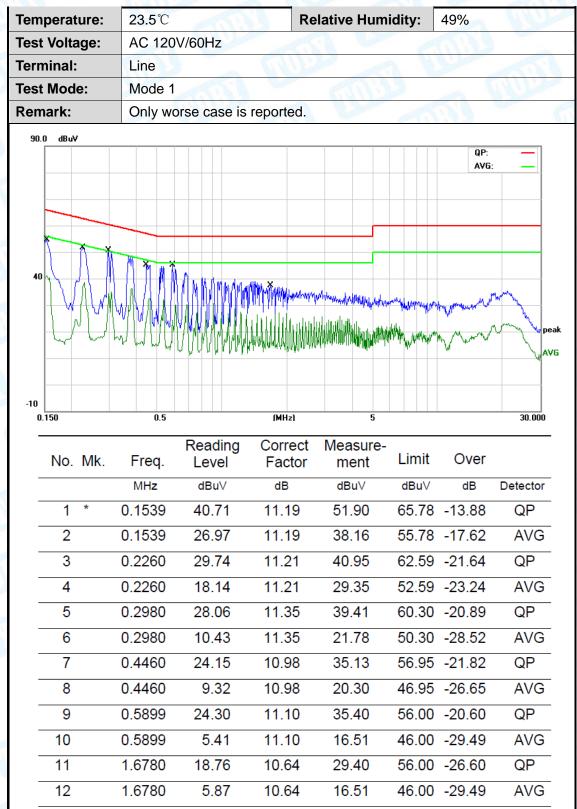
Antenna Type	
⊠Permanent attached antenna	0
Unique connector antenna	
☐Professional installation antenna	





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## **Attachment A-- Conducted Emission Test Data**



- 1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)





					3.3 3.45			
Ten	nperature:	23.5℃	3		Relative Hu	ımidity:	49%	
Tes	t Voltage:	AC 120\	//60Hz					All Oran
Ter	minal:	Neutral						
Tes	t Mode:	Mode 1		ARIE		8		
Rer	mark:	Only wo	rse case is	reported	MAN			Contract of the second
90.0	) dBuV						0.0	
							QP AV	
	×							
	) ) j	M L I V						
40			n Maražrani	Mariani Anno.	ուսեկա եւել .			
					Alva American Califold (1) Villalia	Mark Mark Mark Mark Color	salva Jakinet manaran	Myren from
		as as what				ATAL Logical	My way	peak
	~ COM	W W W U U	INNAKA16.	h i.ili.ila.liti	1112	,		AVG
-10 0	150	0.5		(MHz)	5			30.000
0.			Dooding					
	No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB	dBu∨	dBu∨	dB	Detector
	1 * 0	.1539	40.41	11.19	51.60	65.78	-14.18	QP
	2 0	.1539	26.71	11.19	37.90	55.78	-17.88	AVG
	3 0	.2260	29.16	11.21	40.37	62.59	-22.22	QP
	4 0	.2260	17.54	11.21	28.75	52.59	-23.84	AVG
	5 0	.3660	25.94	11.17	37.11	58.59	-21.48	QP
	6 0	.3660	6.17	11.17	17.34	48.59	-31.25	AVG
	7 0	.6820	22.76	11.36	34.12	56.00	-21.88	QP
	8 0	.6820	9.30	11.36	20.66	46.00	-25.34	AVG
	9 1	.1460	23.27	10.86	34.13	56.00	-21.87	QP
	10 1	.1460	11.61	10.86	22.47	46.00	-23.53	AVG
	11 1	.9860	19.08	10.52	29.60	56.00	-26.40	QP
	12 1	.9860	8.23	10.52	18.75	46.00	-27.25	AVG

- Remark:
  1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
- 2. Margin (dB) =QuasiPeak/Average (dBuV)-Limit (dBuV)

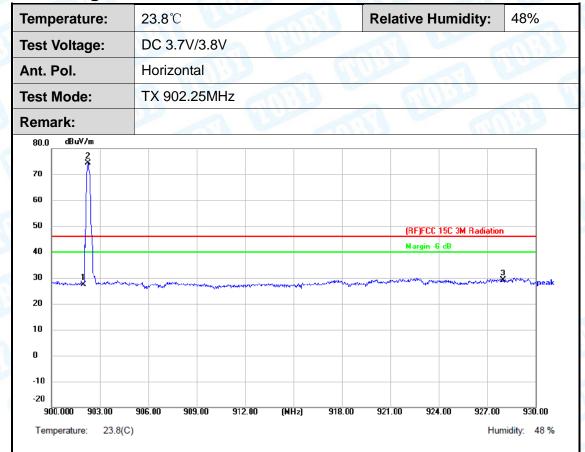




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## **Attachment B-- Radiated Emission Test Data**

## Field Strength of the Fundamental



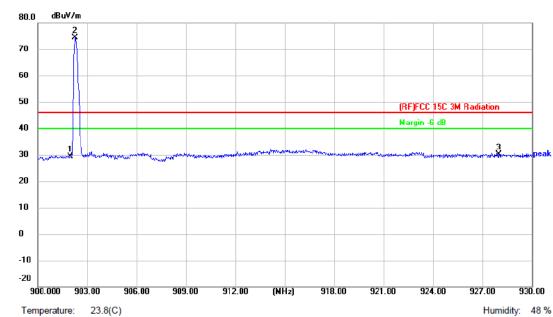
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	34.98	-7.52	27.46	46.00	-18.54	peak
2 *	902.2500	81.85	-7.51	74.34	94.00	-19.66	QP
3	928.0000	36.25	-7.07	29.18	46.00	-16.82	peak





Page: 24 of 42

Temperature:	23.8℃	Relative Humidity: 48%
Test Voltage:	DC 3.7V/3.8V	THE PARTY OF THE P
Ant. Pol.	Vertical	1000
Test Mode:	TX 902.25MHz	
Remark:		

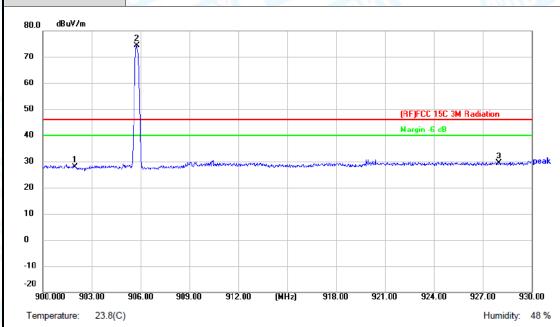


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	902.0000	36.87	-7.52	29.35	46.00	-16.65	peak
2 *	902.2500	81.81	-7.51	74.30	94.00	-19.70	QP
3	928.0000	37.11	-7.07	30.04	46.00	-15.96	peak





Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V	The same of the sa	
Ant. Pol.	Horizontal		Alle
Test Mode:	TX 905.25MHz		
Remark:	MILES AND		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.39	-7.52	27.87	46.00	-18.13	peak
2 *	905.7600	81.96	-7.46	74.50	94.00	-19.50	QP
3	928.0000	36.54	-7.07	29.47	46.00	-16.53	peak

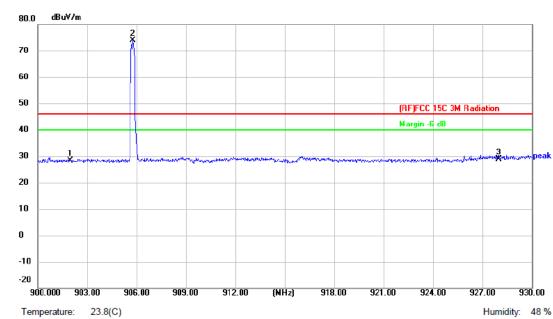






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Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V	MODE TO THE	
Ant. Pol.	Vertical		
Test Mode:	TX 905.25MHz	WILLIAM WILLIAM	
Remark:	11000		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.83	-7.52	28.31	46.00	-17.69	peak
2 *	905.7600	81.32	-7.46	73.86	94.00	-20.14	QP
3	928.0000	36.01	-7.07	28.94	46.00	-17.06	peak





OBY Part of this Cotteno Group

Temperature:
23.8 °C

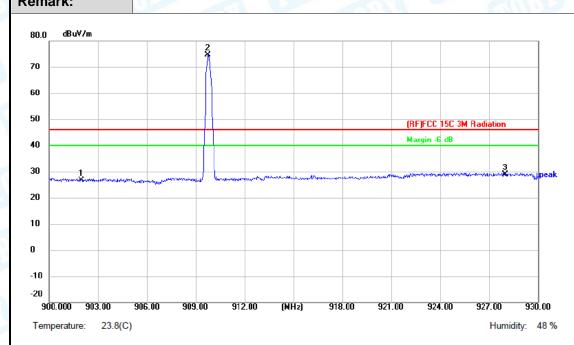
Relative Humidity:
48%

Test Voltage:
DC 3.7 V/3.8 V

Ant. Pol.
Horizontal

Test Mode:
TX 909.25 MHz

Remark:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	902.0000	34.17	-7.52	26.65	46.00	-19.35	peak
2 *	909.7500	82.04	-7.39	74.65	94.00	-19.35	QP
3	928.0000	36.00	-7.07	28.93	46.00	-17.07	peak

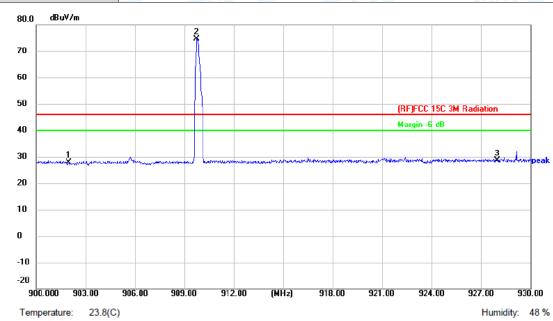




Page: 28 of 42



Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Vertical	4000	AHO
Test Mode:	TX 909.25MHz		
Remark:	Direction of the		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	902.0000	35.40	-7.52	27.88	46.00	-18.12	peak
2 *	909.7500	82.00	-7.39	74.61	94.00	-19.39	QP
3	928.0000	35.78	-7.07	28.71	46.00	-17.29	peak





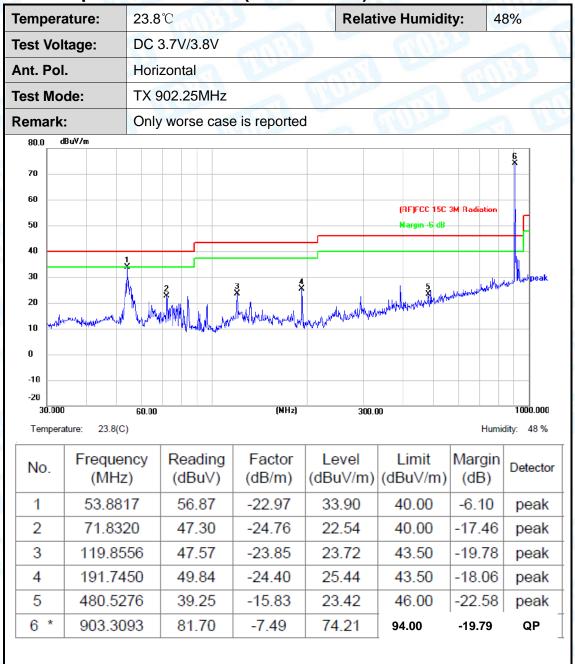
Page: 29 of 42

## Radiated Spurious Emission (9 KHz~30 MHz)

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

### Radiated Spurious Emission (Below 1 GHz)







empe	erature	<b>:</b>	23.8	8℃				R	elative Hum	nidity:	48%
Test V	oltage	:	DC :	3.7V	//3.	.8V			000		AHAT
Ant. P	ol.		Vert	ical	1			21 6	Call .	133	
Test M	lode:		TX 9	902.	251	MHz	J DAG				
Remai	rk:		Only	Only worse case is reported						2 /	
80.0	dBuV/m			10.7							
											6
70											
60									(RF)FCC 15	C 3M Radiatio	on _
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40					_						+++
30		, k			_						
		1 7						3	4	5	peak
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	Mark to the first of the second	, way	h, Mh	2	Mayl	Junto	January .	Janguary out you had been been a second of the second of t	AMA HAMANA	S Night of the	planting peak
10 🏰	m/timb-diplomatel	, ma, J	hijilding	*	Mush	Junton	Mahana	Andrew Constitution of the	ANNA HALINGANANA	5 S. Marine Marine	peak
10 <b>***</b> 0				2	Mund	Junto	Madellanay			55 August	
10 12 0 -10 -20 30.00	00		60.00	*	Whyh.	Jan Andrews	(MH2)		ANY AL MAN ANY ANY ANY ANY ANY ANY ANY ANY ANY A		1000.000
10 <b>***</b> 0	00			*	May	Jan San San San San San San San San San S	Madellanay				1000.000
10 10 0 -10 -20 30.00 Tempe	oo erature:	23.8(C)	60.00	Jaka	1-70 <b>4</b> 1.	dina	Madellanay			Hu	1000.000 umidity: 48 %
10 12 0 -10 -20 30.00	oo erature:		60.00 Cy	Re	eac	ding uV)	(MHz)	30	0.00	Margin	1000.00 umidity: 48 %
10 10 0 -10 -20 30.00 Tempe	erature:	23.8(C)	60.00 Cy	Re (c	eac	uV)	(MH2)	Level	0.00	Margin	1000.000 umidity: 48 %
10 0 -10 -20 30.00 Tempe	oo erature:	23.8(C) equen (MHz)	60.00 Cy	Re (c	ead	u∨) 82	(MH2) Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.000 umidity: 48 %

peak 191.7450 24.89 49.29 392.0951 44.79 -18.18 26.61 46.00 -19.39peak 5 570.6100 37.74 -13.56 24.18 46.00 -21.82 peak 6 \* 903.3093 81.75 -7.49 74.26 94.00 -19.74 QΡ





	ture:	23.8	3℃		Relat	ive Humidi	ty: 4	-8%
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nt. Pol.		Hori	izontal			100		AMA
est Mod	de:	TX 9	905.25MHz		51	and the same	133	
emark:		Only	y worse cas	se is reporte	d	AU		
80.0 dBu	JV/m							
70								<u>6</u>
60								
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10	Manager words W	N <sub>M</sub> ML	MMM	JANIMAN, MANILANI	WAY TANKAN	A A A A A A A A A A A A A A A A A A A		
10 min	enrulging model W	60.00	Manda	MH2)				1000.000
10 -10 -20		60.00	Myndyland		300.0			
10 0 -10 -20 30.000 Temperatu	ire: 23.8(C)		Reading				Humic	1000.000 dity: 48 %
10 -10 -20 30.000		псу	Reading (dBuV)	(MHz)	300.0	0		1000.000 dity: 48 %
10 0 -10 -20 30.000 Temperatu	re: 23.8(C)	ncy )	_	(MHz)	300.0	Limit	Humio	1000.000 dity: 48 %
10 0 -10 -20 30.000 Temperatu	re: 23.8(C) Frequer (MHz)	ncy )	(dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Humio Margin (dB)	1000.000 dity: 48 %
10 0 -10 -20 30.000 Temperatu	re: 23.8(C) Frequer (MHz) 54.451	ncy ) 6	(dBuV) 52.56	Factor (dB/m)	Level (dBuV/m) 29.55	Limit (dBuV/m) 40.00	Margin (dB)	1000.000 dity: 48 %
10 0 -10 -20 30.000 Temperatu	re: 23.8(C)  Frequer (MHz) 54.451 83.815	6 6 6	(dBuV) 52.56 50.58	Factor (dB/m) -23.01 -26.68	Level (dBuV/m) 29.55 23.90	Limit (dBuV/m) 40.00 40.00	Margin (dB) -10.45 -16.10	Detector peak peak
10 0 -10 -20 30.000 Temperatu	Frequer (MHz) 54.451 83.815	6 6 6 56	(dBuV) 52.56 50.58 48.87	Factor (dB/m) -23.01 -26.68 -23.85	Level (dBuV/m) 29.55 23.90 25.02	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -10.45 -16.10 -18.48	Detector peak peak peak



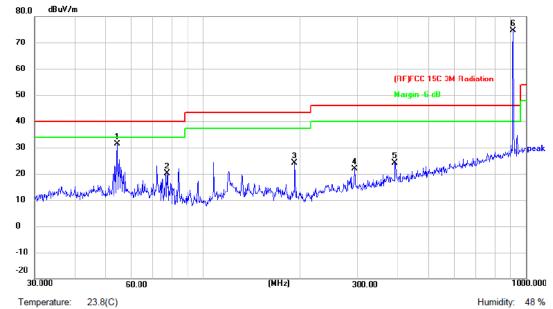


	ature:	23.8	${\mathbb C}$	NY	Re	elative Hum	nidity:	48%
est Vol	ltage:	DC 3	3.7V/3.8V			100		AHOL
Ant. Po	l.	Verti	ical	111	11	CITY OF THE PARTY	1333	
Test Mo	de:	TX 9	005.25MHz	ARTO		A D		MAL!
Remark	:	Only	worse case	e is reported	d Million		A N	A Charles
80.0 d	BuV/m							
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50						(RF)FCC 150 Margin -6 dB	C 3M Radiation	, П
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10	and any and a second	n hadpelitan	My Market and the state of the	Jan Marian Marian	Mary and made so all stock	Mundan bell and he was	Appropriate Control of the Control o	
10		60.00		(MH2)	and and and and and		Appendix of the second	1000.00
10 -10 -20				pladke leterassamily				
10		ncy	Reading (dBuV)	pladke leterassamily	300 Level			1000.00 midity: 48 %
10	ture: 23.8(C)	ncy z)	_	(NH2)	300 Level		Hur	1000.00 midity: 48 %
10	ture: 23.8(C) Freque (MHz	ncy z)	(dBu∀)	(NH2) Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Hur Margin (dB)	1000.00 midity: 48 %
10	ture: 23.8(C) Freque (MHz	ncy z) 16	(dBuV) 51.85	Factor (dB/m)	Level (dBuV/m) 28.84	Limit (dBuV/m) 40.00	Margin (dB)	1000.00 midity: 48 %  Detector peak
10	Freque (MHz 54.45	ncy z) 16 31	(dBuV) 51.85 51.15	(MHz) Factor (dB/m) -23.01 -24.00	Level (dBuV/m) 28.84 27.15	Limit (dBuV/m) 40.00 40.00	Margin (dB) -11.16 -12.85	Detector peak peak
10 10 10 10 10 10 10 10 10 10 10 10 10 1	Freque (MHz 54.45 65.80 119.85	ncy z) 16 31 556	(dBuV) 51.85 51.15 48.63	Factor (dB/m) -23.01 -24.00 -23.85	Level (dBuV/m) 28.84 27.15 24.78	Limit (dBuV/m) 40.00 40.00 43.50	Margin (dB) -11.16 -12.85 -18.72	Detector peak peak peak





Temperature:	23.8℃	Relative Humidity:	48%
Test Voltage:	The same of the		
Ant. Pol.	Horizontal		A AMOUNT
Test Mode:			
Remark:	Only worse case is reported		
80.0 dBuV/m			
70			×
60			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	54.0711	54.44	-22.99	31.45	40.00	-8.55	peak
2	77.3212	46.15	-26.09	20.06	40.00	-19.94	peak
3	191.7450	48.50	-24.40	24.10	43.50	-19.40	peak
4	294.1137	42.75	-20.89	21.86	46.00	-24.14	peak
5	392.0951	42.27	-18.18	24.09	46.00	-21.91	peak
6 *	912.8620	81.92	-7.34	74.58	94.00	-19.42	QP





pc. a	iture:	23.8	$^{\circ}\mathbb{C}$		VA PA	Re	elative Hum	idity:	48%
Test Volt	age:	DC 3	3.7V/3.8	3V	N				AAA
Ant. Pol.		Verti	ical			88	mn -	133	
Test Mod	de:	TX 9	909.25N	1Hz	MAGE				AR!
Remark:		Only	worse	case	is reported	With:		J. K	
80.0 dB	uV/m								
70									ě
60									
							7 7	C 3M Radiatio	, L
50							Margin -6 dE		
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30		<u> </u>			3 4		5 When the land the state of th	المراجع المراع	White And the second
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-10 -20		60.00	T TT NIPALA	ll <sub>out</sub> vix live	(MHz)	300			
-10 -20 30.000		ency	Read (dBu	_	(MH2) Factor (dB/m)	300 Level			1000.0
-10 -20 30.000 Temperatu	ure: 23.8(C)	ency z)	1	V)	Factor	300 Level	.00	Hu	1000.00 midity: 48
0 -10 -20 30.000 Temperatu	re: 23.8(C) Freque (MHz	ency z)	(dBu	V) 7	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	1000.01 midity: 48
0 -10 -20 30.000 Temperatu No.	Freque (MHz	ency z) 74 22	(dBu	V) 77 4	Factor (dB/m) -23.08	Level (dBuV/m) 28.69	Limit (dBuV/m)	Margin (dB)	nidity: 48
0 -10 -20 30.000 Temperatu No. 1 2	Freque (MHz 55.02	ency z) 74 22	(dBu 51.7 58.1	V) 77 4 50	Factor (dB/m) -23.08 -26.07	Level (dBuV/m) 28.69 32.07	Limit (dBuV/m) 40.00 43.50	Margin (dB) -11.31	Detector peak peak
No.	Freque (MHz 55.02 95.76 119.85	ency z) 74 22 556	51.7 58.1 45.5	V) 77 4 50 23	Factor (dB/m) -23.08 -26.07 -23.85	Level (dBuV/m) 28.69 32.07 21.65	Limit (dBuV/m) 40.00 43.50 43.50	Margin (dB) -11.31 -11.43 -21.85	Detector peak peak peak

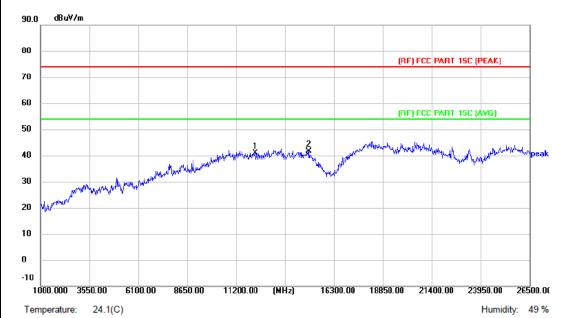




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## Radiated Spurious Emission (Above 1 GHz)

Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V	MODE	A HOSE
Ant. Pol.	Horizontal		
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is re	ported.	A STATE OF



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)		Detector
1	12194.500	41.61	-0.68	40.93	74.00	-33.07	peak
2 *	14999.500	40.23	1.47	41.70	74.00	-32.30	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

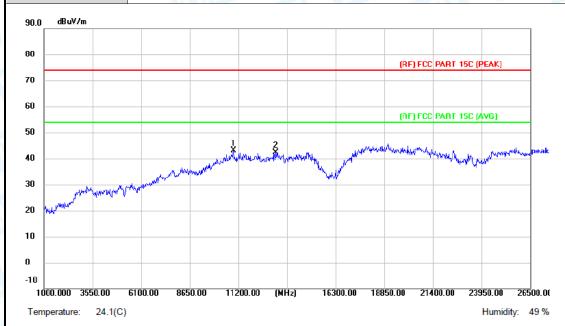






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Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		A A A
Ant. Pol.	Vertical	ans a	
Test Mode:	TX 902.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1 *	10945.000	44.83	-1.81	43.02	74.00	-30.98	peak
2	13163.500	42.39	-0.07	42.32	74.00	-31.68	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-26.5GHz,The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

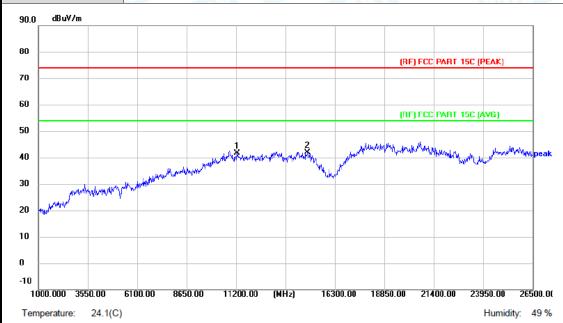






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Temperature:	24.1°C	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reported.		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)		Detector
1	11251.000	43.28	-1.56	41.72	74.00	-32.28	peak
2 *	14897.500	40.54	1.41	41.95	74.00	-32.05	peak

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
   Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
   Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

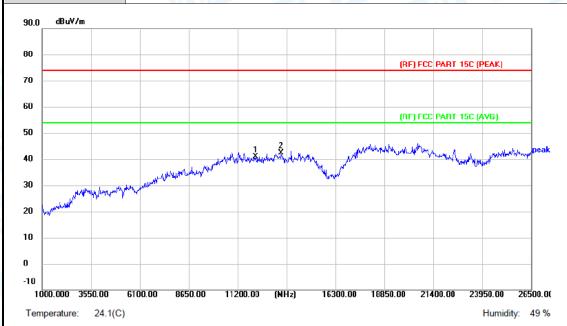






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Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		AHO
Ant. Pol.	Vertical		
Test Mode:	TX 905.25MHz		
Remark:	Only worse case is reporte	ed.	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	12118.000	41.35	-0.46	40.89	74.00	-33.11	peak
2 *	13469.500	42.37	0.10	42.47	74.00	-31.53	peak

- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

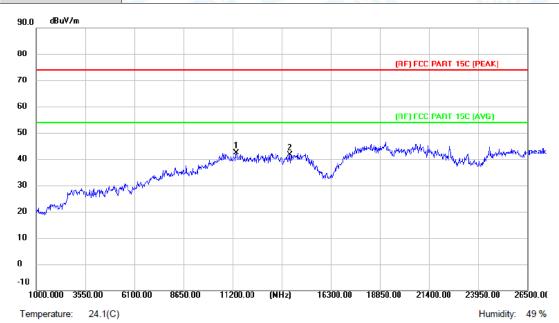






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Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		
Ant. Pol.	Horizontal	William -	A HOLE
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is reported		



No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1 *	11378.500	43.27	-0.97	42.30	74.00	-31.70	peak
2	14158.000	41.61	-0.02	41.59	74.00	-32.41	peak

- Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
   Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
   Margin (dB) = Peak/AVG (dBμV/m)-Limit PK/AVG(dBμV/m)
- 4. The tests evaluated1-26.5GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

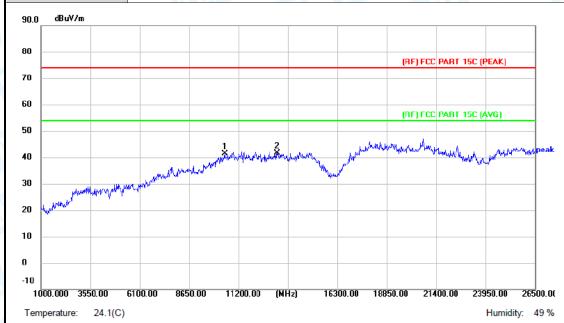






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Temperature:	24.1℃	Relative Humidity:	49%
Test Voltage:	DC 3.7V/3.8V		W. W.
Ant. Pol.	Vertical		
Test Mode:	TX 909.25MHz		
Remark:	Only worse case is report	ed.	Contract of the second



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	10486.000	45.05	-3.63	41.42	74.00	-32.58	peak
2 *	13189.000	41.82	-0.09	41.73	74.00	-32.27	peak

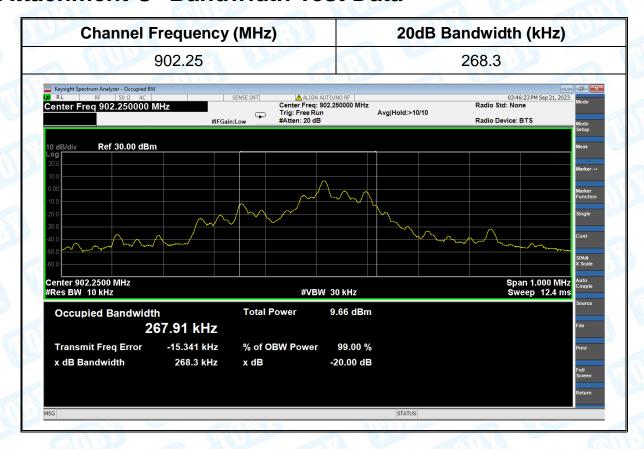
- 1. Corr. = Antenna Factor (dB/m) + Cable Loss (dB)
- 2. Peak/AVG (dBμV/m)= Corr. (dB/m)+ Read Level (dBμV)
- 3. Margin (dB) = Peak/AVG (dB $\mu$ V/m)-Limit PK/AVG(dB $\mu$ V/m)
- 4. The tests evaluated 1-26.5 GHz, The testing has been conformed to the 10th harmonic of the highest fundamental frequency.
- 5. No report for the emission which more than 20dB below the prescribed limit.
- 6. The peak value < average limit, So only show the peak value.

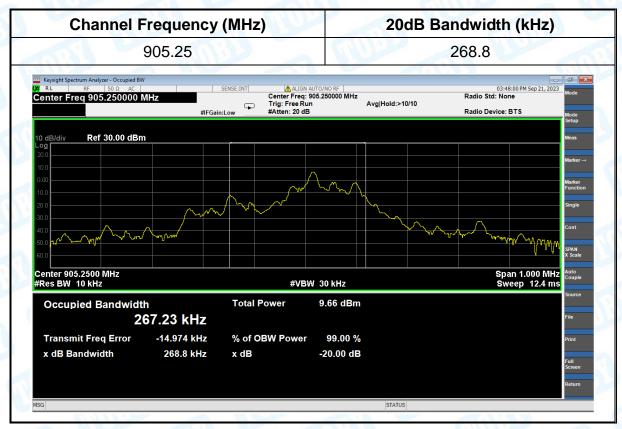




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## **Attachment C--Bandwidth Test Data**

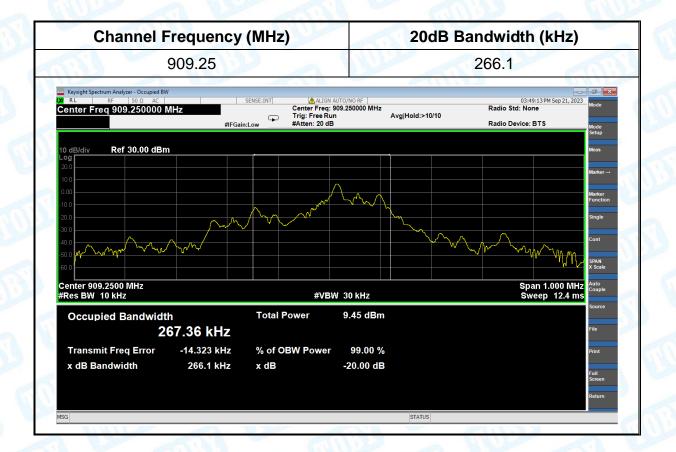








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----END OF THE REPORT----

